CLAIMS

What is claimed is:

1. A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process comprising the steps of:

(a) preparing a silicon carbide fibers solution;

(b) preparing a pollen germination medium;

(c) preparing a DNA solution;

(d) preparing a mixture by mixing said silicon carbide fibers solution and said pollen germination medium with said DNA solution;

(e) adding fresh pollens into said mixture to form a paste;

(f) vortexing said paste for a time interval of 30-60 seconds;

(g) applying said paste for pollination; and

(h) selecting for transformants.

2. A method for genetic transformation transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1, wherein said silicon carbide fibers are approximately 0.1- 20 μm average diameter and 1 - 250 μm length.

3. A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1, wherein the preferred size of said silicon carbide fibers is 1-2 μm diameter and 10 - 80 μm length.

4. A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1,

wherein an aqueous solution for silicon carbide fibers is prepared by adding sterile water or solvent to said fibers.

5. A method for genetic transformation transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 4, wherein said solution is 5% to 25% aqueous solution.

6. A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1, wherein said pollen germination medium is a solution containing about 5% - 15% sucrose, 0.01% - 1.0% H_3BO_3, 0.01% to 1.0% $Ca(N0_3)_24H_20$ at pH 5.6.

7. A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1, wherein said preferred pollen germination medium is a solution containing about 15% sucrose, 0.018% H_3BO_3, 0.04% $Ca(N0_3)24H_20$ at pH 5.6.

8. A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1, wherein said DNA is a plasmid DNA.

9. A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 8, wherein said plasmid DNA is dissolved in a TE solution.

10.A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1, wherein said DNA solution is further incubated at about 20 -25°C.

11.A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1, wherein the selection of a transformate is performed by specific cloned selectable markers having a phenotypic expression or providing resistance to some drugs.

12.A method for genetic transformation according to claim 11, wherein said selectable marker having a phenotypic expression is an anthocyanin regulator.

13.A method for genetic transformation according to claim 11, wherein said selectable markers providing resistance to some drugs are antibiotics or herbicides.

14 .A method for genetic transformation according to claim 11, wherein said selectable markers providing resistance to antibiotics is neomycin phosphotransferase gene.

15. A method for genetic transformation according to claim 11, wherein said selectable markers providing resistance to antibiotics is kanamycin gene.

16. A method for genetic transformation according to claim 11, wherein said selectable markers providing resistance to herbicides is phosphinothricin acetiltransferase gene.

17. A method for genetic transformation of any plant species with sexual reproduction based on a pollination-fecundation process according to claim 1, in any plant species with sexual reproduction comprising flowering plants and gymnosperms.

18.A method for genetic transformation according to claim 17, wherein said flowering plants are selected from a group consisting of monocots.

19.A method for genetic transformation according to claim 18, wherein said monocots is maize.

20.A method for genetic transformation according to claim 17, wherein said flowering plants are selected from a group consisting of dicots.

21. A method for genetic transformation according to claim 20, wherein said dicots are melon and tomato.

22. A method for genetic transformation according to claim 17, wherein said gymnosperms is pine.

23. A transgenic maize having an antibiotic kanamycin resistant property prepared by the process of claim 1.

24. A transgenic maize having a herbicide bialaphos resistant property prepared by the process of claim 1.

25. A transgenic maize having an anthocyanin producing property prepared by the process of claim 1.

26. A paste comprising a silicon carbide fiber, a pollen germination medium, and a purified and isolated DNA molecule.

27. A paste as recited in claim 26 wherein said silicon carbide fibers having 1-2 μm average diameter and 10-80 μm length.

28. A paste as recited in claim 26 wherein said silicon carbide fibers is a 5% aqueous solution.

29. A paste as recited in claim 26 wherein said pollen germination medium is a solution containing about 15% sucrose, 0.018% H_3B0_3, 0.04% $Ca(N0_3)_2 4H_20$ at pH 5.6.

30. A paste as recited in claim 26 wherein said DNA is a plasmid DNA.

31. A method for genetic transformation of maize reproducing sexually, said method comprising of a pollination-fecundation process and comprising the steps of:

(a) preparing a silicon carbide fiber solution;

(b) preparing a pollen germination medium;

(c) preparing a DNA solution;

(d) mixing said silicon carbon fibers with pollen germination medium and said DNA solution to form a mixture;

(e) adding fresh pollen into said mixture to form a paste;

(f) vortexing said paste for 30 to 60 seconds;

(g) applying said past formed in step (e) on silks for pollination; and

(h) selecting for transformants.

32. The method of Claim 31, wherein said silicon fibers used in step (a) are approximately 0.1-20 μm in diameter (and 1-250 μm in length, and more preferably between 1-2 μm in diameter)and 10-80 μm in length.

33. The method of Claim 31 wherein the solution of silicon carbide fibers prepared in step (a) comprises a sufficient amount of sterile water or solvent, to make a 5% to 25% aqueous solution.

34. The method of Claim 31 wherein the pollen germination medium contains about 5% - 15% sucrose, 0.01% - 1.0% H_3BO_3, 0.01% to 1.0% $Ca(NO_3)_2 4H_2O$ at pH 5.6, and more preferably, about 15% sucrose, 0.018% H_3BO_3, 0.04% $Ca(NO_3)_2 4H_2O$ at pH5.6.

35. The method of Claim 31 wherein said DNA is a plasmid DNA.

36. The method of Claim 35, wherein said plasmid DNA is dissolved in a Tris EDTA solution.

37. The method of Claim 31, wherein the selection of a transformant is performed by using specific cloned selectable markers selected from the group consisting of antibiotics and herbicides.

38. The method of Claim 37, wherein said selectable marker is a gene providing resistance to neomycin phosphotransferase.

39. The method of Claim 37, wherein said selectable marker is a gene providing resistance to kanamycin.

40. The method of Claim 37, wherein said selectable marker is gene providing resistance to phosphinothriun acetyltransferase.